CONFIDENTIAL TONTOLENTIAL CLASSIFICATION CENTRAL INTELLIGENCE AGENCY REPORT INFORMATION FROM FOREIGN DOCUMENTS OR RADIO BROADCASTS COUNTRY DATE OF 1948 INFORMATION Technological - Machine tools SUBJECT DATE DIST. 2 Oct 1949 HOW PUBLISHED Monthly periodical WHERE NO. OF PAGES **PUBLISHED** Moscov DATE PUBLISHED Feb 1948 SUPPLEMENT TO LANGUAGE Russian REPORT NO.

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Stanki i instrument, No 2, 1948.

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MILLERS WITH CAST ZING-ALLOY BOUBING

Eng A. B. Frenkei!

To lower the cost and simplify the manufacture of an assembly tool, come plants try to substitute the cheaper cast-steel bodies for the more expensive tooled-steel bodies with mechanically strengthened blades. Such a bimetalic tool is not extensively used in our plants, as its manufacture entails difficulties such as the complicated processes of casting the blades (large percentage of spoilage) and of heat-finishing after the blades are cast, additional tooling of the cast body, etc.

The Plant imeni Stalin uses a zinc alloy in the manufacture of sectional tools. This alloy consists of the following components: 4.75 percent Al; 0.07 percent Mg; 0.08 percent Cu; C.01 percent Pl; 0.05 percent Fo; the remainder zinc. Eardness of the alloy: H = 63. The advantages of using an early Tusible zinc alloy with a melting point of 470-380 degrees instead of steel in manufacturing sectional tools is obvious. The melting point of this alloy is considerably lower than the temperature for tempering blades made of high-speed steel (560-590 degrees). Blades that have been first tempered to the required hardness do not lose their temper after casting and hence preserve all their cutting qualities.

Cast in a press form under pressure, the body scarcely needs subsequent tooling. A perfectly clean tool is obtained from the casting with the exact measurements of specifications. Only the openings in the holder and the faces of the body are subject to tooling. The appended figure shows a threadmilling outter with cast blades in a body of zinc alloy. Grinding the threads takes place after casting. Perforations, 5 to 5.5 millimaters in diameter, are made in the blades to provide a simpler joint with the body — the alloy enters them in casting. To fix the blades and place them correctly in the press form they are factured by a steel snap ring (1 in appended figure) made of vire with a diameter of 2.5 to 3 millimater. For millers with a bored supporting ring this is not necessary, since washers which cannot be detached from the press form ensure a safe and correct seating for the blades during casting.

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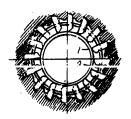
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Another advantage of cast zinc-alloy bodies over cast steel-alloy bodies should be noted. In the latter, when some blades of the tool are worn, it is very difficult to knock the blades, worn or not, out of the body, therefore, both the nonworn high-speed steel blades and the cast-steel body become scrap. Worn-out cast blades, in a zinc-alloy body, are readily removable. It is necessary only to dip the worn-out tool in a zinc-alloy bath and keep it there a few minutes. The body melts and the blades fall out easily. To keep the blades from being scattered in the bath and make their recovery easy, they are connected by a wire (2 in appended figure). Once separated from the melted body, the series of blades is easily removed from the bath by means of a hook. A sandblast apparatus removes any of the melted body adhering to the blades.

When worn out, a tool with a cast zinc-alloy body is recast with scarcely any loss of metal.

Appended figure follows.



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